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## Hunting the Hart's Tongue and Holly Fern at Owen Sound, Ontario

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October is rather late to turn a botanist loose for his vacation, but that was my experience in 1909. I was not even sure I could get away till a few hours before I started. I had made up my mind that the only thing I could do so late in the season would be to go to Owen Sound, Canada, where I understood the holly and hart's tongue ferns grew, both "evergreen" to some extent, at least. Taking a few necessaries (which includes a kodak in my case) I was off.

Owing to lack of information, poor connections, indirect roads and slow schedules, to say nothing of taking a train in the wrong direction, I was a long time on the way, and arrived very late one evening, but providentially landed in one of the best hotels in the place. Next morning, I discovered I was in a live, little city of some thirteen thousand, instead of in a country town, as I had fancied before starting. The masts of a large lake vessel, less than a block away, could be seen from my window, a couple of huge grain elevators along the water front (since burned) and the city itself spreading out practically level a mile or so wide and a couple of miles long.

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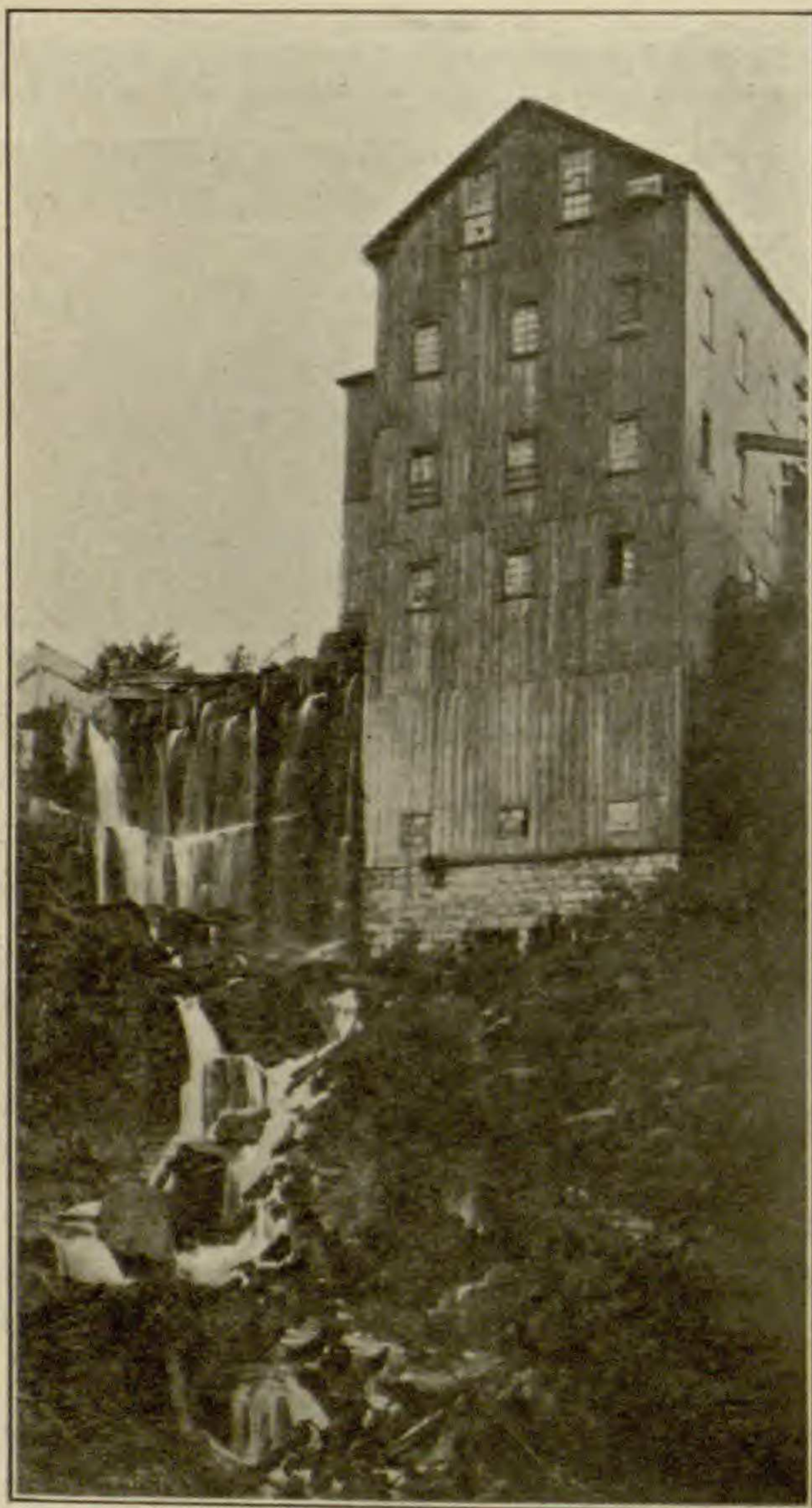


FIG. 1. The mill above Inglis Falls.

Limestone ledges and hills form a letter U around the place, the open end toward the Sound occupied by the city, and the closed end of the U extending southward perhaps a couple of miles beyond the place. At this southern end of the U, a small stream comes tumbling

down over the ledge, forming Inglis Falls. A mill is located on the brink above and the water drops by easy stages from ledge to ledge.

All of the roads leading out of the city are quite steep, but one finds a strip of comparatively level country at the top of a rise, and back of this level, another sharp rise, half a mile or so away. The greater portion of the land is under cultivation, while the rougher places are wooded.

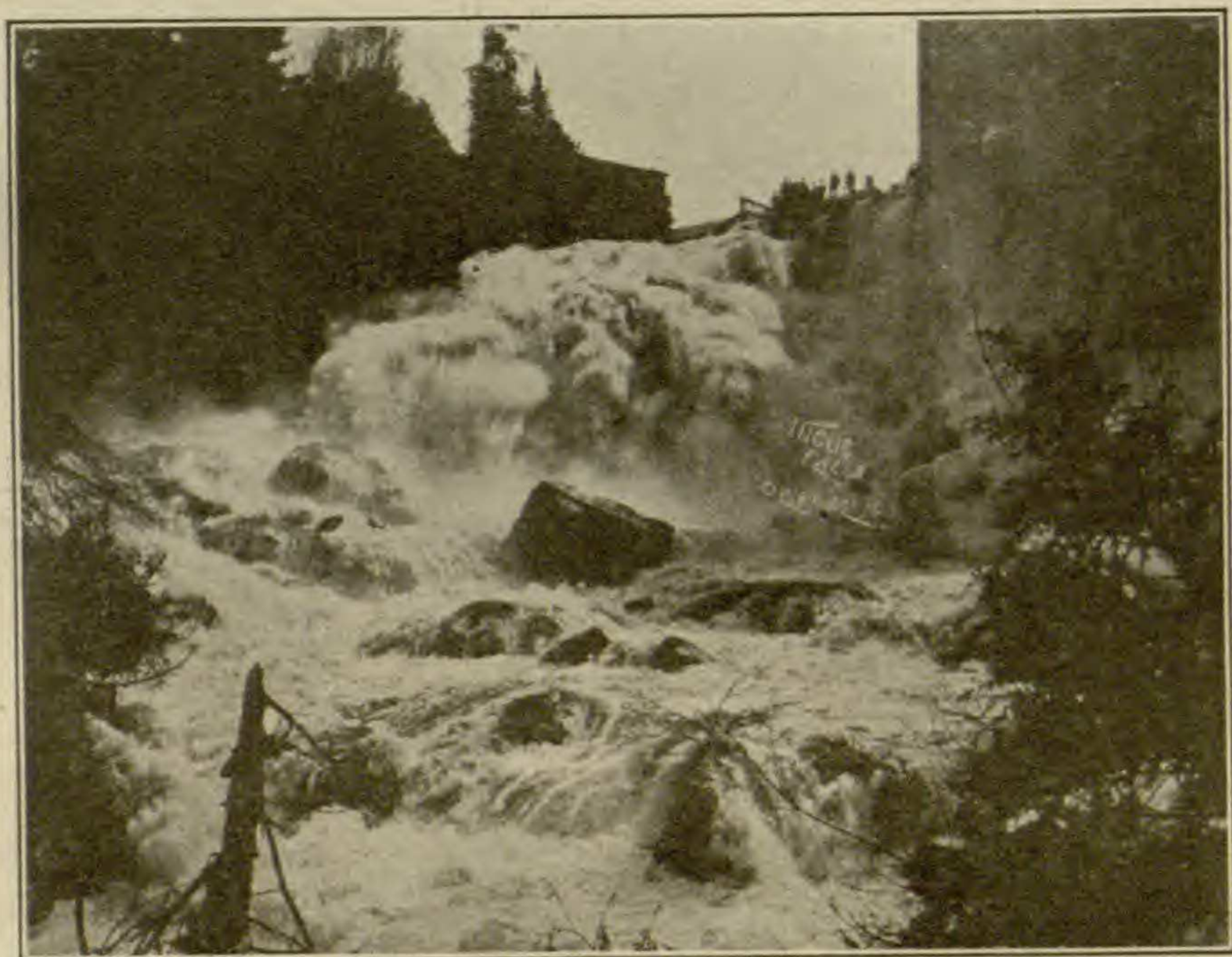


FIG. 2. Inglis Falls in flood.

My first expedition was to Inglis Falls and, finding the road had a couple of turns in it, about half way there, I tried cutting across fields, to the west, where the woods came down to the base of the hill, intending to follow it till it brought me to the Falls. Great was my delight to find a few small hart's tongue ferns before I had gone five rods into the woods. A long, hard tramp along the

curve of the hills did not reveal anything more of interest before I reached the highway again, where it passes but a few rods to the west of the Falls. Passing towards the base of the Falls, one is greeted by a number of very fair specimens of the hart's tongue, in the very rough, rocky woods, within one hundred feet of the road.



FIG. 3. Inglis Falls at low water showing rock formation.

A little farther along the holly fern was found, and as it was my first sight of it, it surely "looked good" to me, though the fronds were only six or eight inches long. I tried to photograph some, and put others into my collecting case, for I thought I had found typical specimens, but later I found much more thrifty ones at the top of the Falls, under evergreen trees, where, on account of the deep shade, there was little else growing to compete with them. Here the fronds averaged 12 to 15 inches long and arched well over toward the ground. In a couple of places where the trees did not monopolize the space, the hart's tongue grew from open seams of the rocks, perfectly erect and of medium size.

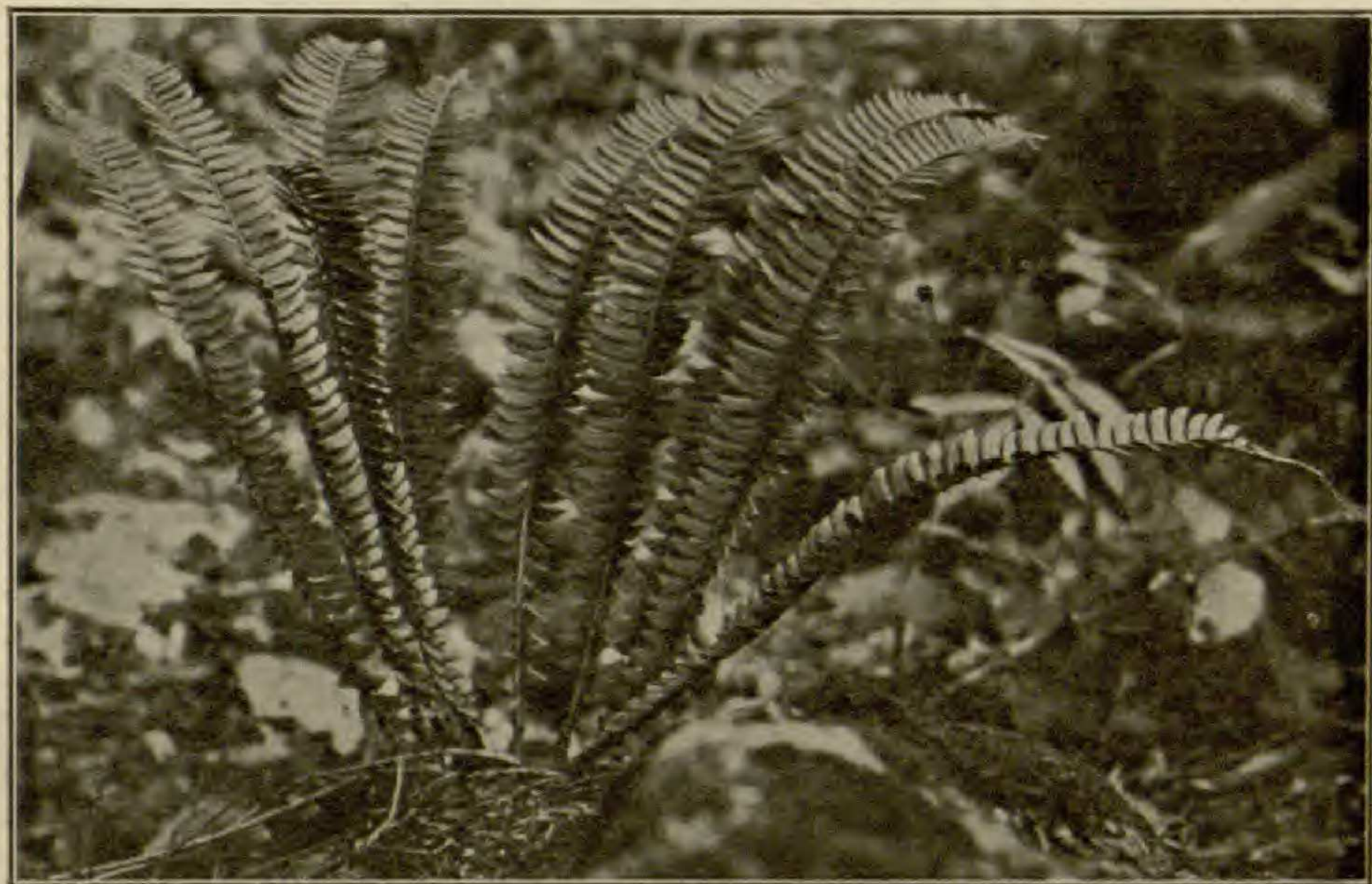


FIG. 4. A good plant of holly fern.

There were hundreds of holly ferns at this station, surpassing the Christmas fern in depth of color, in elegance of carriage, and but little inferior in size. At one spot, however, where fully exposed to the light and in dry, poor soil, the holly fern grew perfectly erect, of small size and of a rusty color.

Crossing to the east side of the stream and searching without result, I retraced my steps, filled my collecting case with specimens and started hotelward through the gathering dusk. (I have since learned that I missed the main station for hart's tongues, which is much further south along the east side.)

The next day I followed the ledge from just east of the city line toward the south, finding holly ferns principally at the top of the cliffs; but it was a serious day's work, forcing one's way through thickets, or over the rocky places, and no station for hart's tongues could be found. Birch trees were very much in evidence, fur-

nishing me, as they had many others before, with dainty bark, fit for the finest correspondence.

Another trip several miles to the east was made by stage, and then afoot, examining the woods and ledges along the highway at first, then across country for five or six hours. Stopping at a farm house to inquire where a certain ledge might lead me if followed out, the lady of the house directed me to a short cut, saying, "Go up to the little brick church on the corner, turn to the right and go down to the fourth line." My repeated inquiries brought out the fact that the "fourth line" was a certain highway! Before reaching the church referred to, the road



FIG. 5. A strip of road near which Holly Ferns and Hart's Tongue grow.

crossed a ledge, and in the woods just above there were plenty of fine holly ferns and scattering, stunted hart's tongues, the latter in more than one place were within a few feet of the wheel tracks of the well kept stage road, so near that the driver could flick them with his whip. A little farther on, across the road from the little brick church, children had a play-ground in the woods, and

both kinds of ferns were found close by, sometimes trying to occupy the same spot, with roots tangled one with the other! Those found so close to the road usually were only 2 to 6 inch fronds, but at one place 8 to 10 inch fronds came within 3 feet of the dusty road.

After turning off to the right at the church, it was a tramp seemingly of several miles before the road dropped down over the ledge again, and as I left the road to follow the rocks eastward again, I never reached the "fourth line." A log cabin, long since deserted, and nearly hidden by the new growths about it, was found soon after leaving the highway. The rocks were fearfully rent and the going not altogether free from danger,



FIG. 6. A limestone ledge.

especially as I tried to keep near enough to the edge to keep a lookout for things of interest below, as well as above. Mile after mile it was huge, detached rocks, rocky woods, thickets, repeating itself over and over again. Both kinds of ferns were found scattered over most of the way, the hart's tongues uniformly undersized and struggling for an existence. Holly ferns were just as uniformly thrifty and "well to do."

The hart's tongue seemed to prefer a position 50 or 100 feet back from the edge of the ledge, in seams between rocks, where soil had accumulated, and while woods extended practically the entire distance traveled, they grew better where it was but partially shaded, and vines and shrubs had a foothold. A great many trees had been overturned by the wind, and usually their roots held all the earth, stripping it clean from quite an area, and leaving bare rocks.

Though so late in the season, the days were oppressively warm and made it quite impossible for me to make good time, loaded down with camera, tripod, field glasses, collecting case, lunch, etc., and together with the extremely rough traveling, it was impossible to reach Woodville for the night as planned, except by taking to the wagon road. Toward evening I had a chance to get my bearings and arrived in time for a late supper. Black tea, which seems to be used universally in that section, was placed before me, and in spite of its tendency to keep one awake, I drank it freely but did not lose a wink of sleep, I was so exhausted.

The next morning at breakfast, a middle-aged laborer, who learned of my interest in hart's tongues in particular, assured me he had seen them "in the old country" growing as high as a certain sideboard, which he pointed out, which I estimated to be at least four feet!

The road at Woodville drops down across the ledge which I had been following, so it was easy to resume the search. Nothing of interest was found to the north in the woods or along the rocks, so I returned by a little used road, discovering two hart's tongue stations quite near the little town. A narrow line of woods crossed the road, rocks outcropping a foot or two, and between the rocks, in full light, were plenty of specimens, some but a foot or so from being run over by the wagon wheels. Those in the open here were much thriftier than others in full





FIG. 7. Woodville: At the left, one of the frequent outcropping ledges.

shade nearby. Still nearer the brow of the hill, overlooking the place, in a semi-wild apple orchard, were scattering but fair-sized hart's tongues, that is, better than the most of those I met with in the vicinity. On the main road, leading back to Owen Sound, just outside of Woodville, there is a little school house, right in the edge of the woods, the trees almost touching the building. Very large rocks stand up two to five feet above the ground; the trees are large, not crowded and but little grows in their shade. Here the school children appeared to have resorted to "play house" as witnessed the bits of pottery, premises outlined with pebbles, etc., and here too hart's tongues were quite well distributed. It would have been a quiet nook had not a blue jay had an errand there. He looked beautiful, and acted cheerful, but his voice was shocking.

Quite near this place, while sitting in the shade reading a paper, I became conscious of something moving near me, and glancing up I saw as beautiful a black squirrel as I ever hope to see, not over 25 feet away, on



FIG. 8. A peculiar rift in the limestone.

the top of a rail fence, with a butternut in his teeth, sharply eyeing me. My camera was by my side, but it might as well have been at home, for with a whisk of his tail he sped along to safety. A little later the stage picked me up and I had supper in Owen Sound.

A trip to the southwest followed and perhaps the most interesting experience was finding *Scolopendriums* grow-

ing in a farmer's barnyard. True, they were not large ones, nor were there a great quantity of them, but it would be hard to imagine anything more unexpected. Eroded pockets in large rocks that poked their heads above the surface here and there, afforded a foothold, and the pockets being narrow and deep enough, the cattle were unable to reach the fronds. The colonies appeared to have been long established and really looked better than many of similar size in the wilds.

My second pleasure was the finding of a clump of dry fronds of the slender cliff brake, back from the face of the cliff some 20 feet at the edge of a fissure.

Kemble and McLeans Mountain were reached on my last trip out, and as they were some 10 or 12 miles out, I drove there. It had turned colder that morning and by the time I had arrived at McLeans Mountain, it had begun to snow a little. The "mountain" may appear as such from the waters of the Sound, which nearly reach its foot on the east, but it would commonly pass for a "hill" as one approaches it by the road. It looks as if it had parted from the high land half a mile back from it, and slipped off towards the water when the earth was young. I had read of Hart's tongues being found "in deep shade" at Owen Sound, and fancied that it would be growing under trees that grew close to the water along little coves, and half expected it would be necessary to row along in a boat to discover its haunts. Here at McLeans Mountain it grew nearer the water than any other spot I visited, but in this case it was fully a quarter of a mile from the shore. *P. Lonchitis* was abundant and thrifty, while *Scolopendriums* were not hard to find, but with one exception were undersized. The exception was a colony of about 15 or 20 good, healthy, vigorous ones, a quarter of the way down the face of the slope, with large, loose rocks all around, slightly shaded, and in just such a place as one would reasonably expect to find them in central New York.

Some portions of the slope were nearly impassible by reason of rocks, brush and windfalls. A heavy, wet snow was now falling, but melted about as fast as it came, saturating the deep layer of autumn leaves upon the ground and made traveling much like wading in water.

A visit was made to the main heights half a mile or so back from the mountain, revealing nothing more than some small forms of *Scolopendriums*. Returning to the barn for the horse, good farmer McKenzie heartily urged me to go to the house for a "cup of coffee, which all of you Americans like," as he put it, but it was snowing harder, and so late, I was forced to decline and started on the twelve mile drive straight into the face of the storm. My shoes were soaked and my feet suffered so much, it was necessary a couple of times for me to run beside the wagon to warm up.

In conclusion and by way of summarizing the results of my trip, I am adding some general notes on the two ferns about which I have written.

The holly fern appears to prefer partial shade, where the trees have been thinned out, and berry bushes and brush have followed. More were found along the tops of the ledges than below and comparatively few on the talus. It did well under pines and cedars. Some of the finest specimens met with were under large pines, erect, solitary, the only green thing growing up through the deep layer of brown pine needles, with fronds 20 to 25 inches in length. In contrast were those found without shade, in poor soil, small and olive to rusty brown color. Forked fronds were occasionally discovered, as were fronds that had endured for two seasons at least. These older fronds were invariably prostrate and frequently hidden by the forest leaves.

The hart's tongue is distributed quite widely over that section, but is much inferior in size and less erect than in

central New York. At Owen Sound it grows freely on top of rocks, from small seams and crevices of out-cropping rocks, while in New York it grows in the rich humus deposited between loose rocks forming part of talus. In Canada great numbers of scattered specimens are sterile or nearly so, thin, gray-green in color, spotted with lighter blotches, inclining to white. These give one the impression that they are poorly nourished and immature. Such specimens were comparatively prostrate. Some have thought that the Canadian specimens showed no tendency to fork, but a close watch proved that nearly every thrifty colony contained forking fronds and 30 or more were collected that show various degrees of forking. I do not, however, recall finding a single frond that showed auriculate base lobes, such as are found in New York.

As I was without a local guide of any kind, and because the hart's tongue grows so differently there, I feel sure I did not find rich stations for it, which must exist to disseminate spores in sufficiently great abundance to keep the locality so generally affected by them. The rock formation, soil, flora, and elevation of Owen Sound and central New York are almost identical, and climate alone does not appear to account for the difference in growth. That it should be so particular where it grows in New York, and so indifferent in Canada, is puzzling.

I might add finally that I had the pleasure of securing a couple of new members while on my trip and have had considerable pleasure since in distributing specimens secured there.

MANLIUS, N. Y., APRIL 7, 1913.